

CLIMATE CHANGE ADAPTATION LITTLE HOOVER COMMISSION STUDY

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Climate change is a complex and challenging topic with a wide array of issues and a diverse group of stakeholders. I applaud the Little Hoover Commission's leadership in this important area and thank you for the opportunity to testify on behalf of Fireman's Fund Insurance Company. Fireman's Fund has been a leader in discussing the effects of the climate risk and developing effective insurance and risk management responses. I am responsible for developing Fireman's Fund's Green Insurance coverages and have taken an active role in connecting both the green and insurance worlds. I am a member of the U.S. Green Building Council Board of Directors and have represented Fireman's Fund at numerous green and climate-related meetings and symposiums. As a member of the Allianz group, Fireman's Fund is very proud of Allianz's efforts to raise public, corporate and institutional awareness of climate risks and their implications. To learn more about Allianz' work in this area, please see the Allianz open web site — http://knowledge.allianz.com/environment/climate_change/

California Climate Risks

California faces a unique set of climate risks, many of which are exacerbated by population concentration in "at risk" areas. Not surprisingly, growth in these areas carries with it a corresponding increase in the economic impact. As you can see, some climate risks are covered by private insurance, but others are not. The following represent specific California climate challenges.

- Rising sea levels:

The U.S. Geological Survey has produced extensive material mapping potential at risk areas in a variety of scenarios. In the United States, most damage from rising sea levels is considered flood loss, with private property coverage most often secured from the federal government through the National Flood Insurance Program. Rising sea levels also present significant risk to California's public infrastructure that lies just above sea level. Airports, the Delta water infrastructure system, municipal properties, port facilities and more are exposed. Hardening the infrastructure against rising sea levels is expensive and may create its own set of challenges.

- Changes in storm frequency and patterns:

There is an increased risk of drought and flood as winter snow packs diminish, aquifers and reservoirs are stressed and heavy rains result in flash floods. These changes have immediate, long-term implications. Plus, deviations from historic patterns make

prediction and planning more difficult. These changes will have a direct impact on flood and crop insurance, with an indirect effect on property and casualty insurance.

- Spread of disease and pests:

Warmer winter temperatures and changes in rain and snow fall levels may cause expansion in the historic range of diseases and pests. These pose a risk to public health, agriculture and wild lands health risks. Again, crop insurance is directly affected.

- Wildfire:

The combination of changes in storm frequency and the spread of pests and diseases exacerbate the existing risk of wildfire in California. Population movements to the wild land areas that interface with the urban areas result in a significantly increased risk to insurers.

- Ocean acidification and rising ocean temperatures:

Warmer oceans can result in changing ocean currents and weather patterns, resulting in further changes to historic storm frequency patterns. In turn, California fisheries face increasing economic risks.

- Warmer summers:

Increased public health risks and a greater demand on infrastructure and utilities may lead to black outs and brown outs. This increased stress on the infrastructure also can have an adverse impact on property/casualty insurance.

Climate Risk Management

There are three primary risk management approaches to climate risk: mitigation, adaption and disaster planning. Effective climate risk management programs incorporate elements of all three.

- Mitigation:

Primary mitigation techniques include reduction of greenhouse gasses (GHGs) and water conservation. Green building practices go a long way to reduce the GHG footprint and water consumption. They also bring economic value in the form of lower utility costs. Technology such as alternative energy or carbon-capture methods also may potentially mitigate risk.

- Adaptation:

Adaptation strategies are an essential component of risk management. CO₂ concentrations now exceed 400ppm and continue to rise. As GHGs accumulate in the atmosphere, climate risk manifestations will continue to intensify. The key is to identify the appropriate level of risk to set strategies. For example, should coastal risk adaptation

be designed to address a one meter sea level rise or a three meter rise or even higher? Life cycle, cost and safety issues also must be considered. Resiliency is an important adaptation concept.

- **Business Continuity/Disaster Planning:**

Superstorm Sandy once again demonstrated the need for pre-event planning. Unfortunately, it is estimated that nearly 80% of U.S. businesses have not taken this important step (according to the International Profit Associates Small Business Research Board - IPA SBRB at <http://disasteradvisor.ffido.com/content/emergency-preparedness-your-business>). When planning for disasters, businesses and families should consider local or state plans (if they exist).

Insurer Actions

Fireman's Fund is proud of several initiatives that actively address climate risk management:

- **Green Insurance Coverage:**

In 2006, Fireman's Fund developed the first green building insurance coverages. Our coverage recognizes LEED and other green certified buildings with broadened coverage and pricing advantages that reflect our assessment that these buildings present a reduced risk of loss. We also provide post loss upgrade coverage, which will pay the additional costs to repair or replace the damaged or destroyed properties with green alternatives. Our coverage extends to cover commissioning expense; the cost to hire an independent expert to confirm that repairs have been completed in a greener (and safer) way. We believe commissioning is an important process to reduce the physical risk of green buildings.

The commissioning process involves an independent third party assessment of the key building systems: electrical, plumbing, HVAC and often the envelope. This is intended to ensure that these systems will produce the intended green benefits. Because the three most significant causes of loss in commercial buildings are electrical fires, plumbing leaks and envelope leaks, commissioning also promotes safer systems.

We also have concluded that older buildings that have undergone system upgrades perform (from a loss standpoint) much more favorably. Their loss ratios are very close to those of new construction. Finally, we have concluded that business owners who are concerned about green and sustainability are better managers of their overall risks.

- **Green Risk Advisor:**

Following the success of our green building insurance, we developed a Green Risk Advisor website at <http://greenriskadvisor.ffido.com/microsite/>. This site provides risk management information, links to external resources and a "Go Green Toolkit" to facilitate green and energy-efficient upgrades to residential and commercial properties. The site is open to the public.

- Disaster Recovery Risk Advisor:

We also feature a Disaster Recovery Risk Advisor Website at <http://disasteradvisor.ffido.com/>. On the site, you can find risk management suggestions for protecting your home, family and business from a variety of natural disasters (flood, wildfire, hurricane, severe storm, earthquake and tornado). We also provide advice and resources to enable businesses and families to develop disaster and business continuity plans.

- Corporate Actions: As a company, Fireman's Fund has taken a number of actions to reduce GHG emissions, "green" our facilities and invest in alternative energy. Our Green Press Kit provides more detailed information about Fireman's Fund's work in this area. http://www.firemansfund.com/Documents/Green_Press_Kit.pdf

The insurance industry has recognized the impact that climate risk is having on underwriting results. In response, catastrophe models have been developed to measure potential risk associated with hurricanes, severe storms (inland wind and hail), wildfires and earthquakes. Companies are deploying the models in order to better understand their individual risk and to appropriately underwrite and price their products. In some cases, companies have determined that they can no longer afford the risk of writing business in certain high-risk locations (primarily the Gulf and Atlantic coasts) and the resulting market dislocation has typically been filled by state-sponsored insurance programs. Clearly, climate change has been identified as a major risk.

Because climate risk is not static and severe events occur over a long time horizon, the models have tended to underestimate the final cost of risk. For example, in Sandy, the models significantly underestimated the exposure to loss of income. Because climate risk is a moving target and costs continue to escalate, private insurance costs in areas that are exposed to climate risk also have increased. This is not necessarily the case for government-sponsored insurers, such as the National Flood Insurance Program or state-sponsored coastal wind insurance programs. These programs tend to be subsidized in order to keep the costs of insurance more affordable for exposed policyholders. Many would argue that these subsidies have encouraged development in areas prone to floods and winds, putting more people and property at risk.

Resiliency

Resiliency has become an important topic in the climate adaptation discussion. While there is general agreement on a high-level definition (the ability to withstand and recover from catastrophic events), there is little clarity regarding resiliency as it applies to individual buildings. The insurance industry has responded to green buildings with new products and favorable pricing because LEED (and other green building rating systems) essentially defines what a green building is. There is no corresponding system to do the same for resiliency. Consider these issues:

- Resiliency is specific to location. For example, a resilient building in South Florida may not be resilient in Oklahoma or San Francisco. Resiliency reflects local perils that the building is exposed to and how it will withstand a variety of losses. Not surprisingly, local officials consider a variety of factors when they consider adoption of building codes and zoning ordinances. Although the insurance industry reacts to code and land use decisions in assessing risk and price, historically it has had limited ability to influence decision making. Some trade associations, such as the National Fire Protection Association and the Institute for Building and Home Safety, have actively worked to ensure that the voice of the insurance industry is heard.
- Property insurance underwriting and rating processes generally incorporate resiliency factors, especially building construction and protection. For example, when commercial insurers provide flood protection, they often consider flood zones, elevation and distance to a body of water. Coastal wind underwriting considers distance to the coast and building construction. When underwriting for severe storms and hail, the type of roof is an important factor.
- Even with stronger building codes and land use planning that incorporates climate risk, the new codes apply only to new buildings and projects. Existing buildings remain in place and the risk does not materially change.
- Resiliency considerations also extend to neighborhoods and infrastructure. As we saw in Sandy, individual buildings may have escaped with minimal direct damage. However, there was significant business income loss due to damage suffered by the neighborhood or to the supporting infrastructure. The generation capacity for distributing power usually goes off line when the grid shuts down. In a major loss event, PV arrays will not function. In these situations, the government plays a much larger role than insurers.
- As with adaptation, there are questions as to how resilient a property or neighborhood should be. To what level of event do you design? Climate change might well accelerate the return periods (frequency) of a 100-year or 1,000-year event. Designing a building or neighborhood to withstand a 1,000 year event will raise costs, which is not a viable proposition in most private or public spheres today.

A number of insurers have increased their understanding of the green building risk profile and have responded with new and unique coverage. The same level of comfort may not exist with resilient buildings. Until there is a LEED-like definition for resiliency, buildings will continue to be underwritten based on their individual risk features. To respond to new building codes, insurers will frequently attach “Ordinance and Law” coverage.

Conclusions and Suggestions

Climate change brings a new and challenging set of exposures that affect us all. The insurance industry directly covers some of these risks, while state and federal government insurance programs cover others. Still, some of the more unique risks of climate change have yet to be addressed.

The insurance industry plays an important role as a key stakeholder in mitigation and adaptation efforts. Insurers have a great deal of risk management expertise that can be leveraged to identify best practices in mitigation, adaptation and disaster recovery. As an industry, we've already been leading the way in developing catastrophe models that further our understanding of climate risk and help formulate underwriting responses. As noted, Fireman's Fund, has been proactive in developing green insurance products, providing risk management advice and ensuring that our operations are "green." We've also made valuable risk management available to the public through our Green Risk Advisor and Disaster Risk Advisor websites.

The industry sees resiliency as a key issue in discussing adaptation strategies. Fireman's Fund, in particular, recognizes that there are many comprehensive factors that need to be taken into consideration – ones that extend beyond the resiliency capabilities of an individual building into the larger neighborhood and supporting infrastructure.

Although insurers are not able to address the full scope of issues on your agenda (such as building codes and land use planning), I urge you to consistently leverage our risk management expertise, knowledge, methodologies and best practices in dealing with climate change.

Thank you again for the opportunity to share my perspectives and the work that Fireman's Fund has done to address climate change – a topic that is critical to us all.